Summary of Changes to Conservation Element

A draft of the Conservation Element was prepared by the Master Plan Committee over the course of approximately one year. This DRAFT was submitted for input by the Environmental Commission. In addition, feedback was sought and provided on this DRAFT by the Town Engineer, the Planning Board Engineer and Professional Planner.

This DRAFT Conservation Element is proposed to replace the final December 10, 2013 Conservation Element.

Highlights of changes to the 2013 Conservation Element include the following:

1. Reorganized sections of the Element to be consistent with overall Master Plan formatting changes, including a Sub-Element for Stormwater Management ;
2. Added sections on the Township's Natural Resource Inventory Overview, including new sections on the geology, topography, wetlands and water resources;
3. Updated key challenges the Township must face in protecting its natural resources; and,
4. Updated and consolidated a list of recommendations.

Update Feb 2019
This version includes:

1. initial comments from Long Hill Environmental Commission.
2. New Key Challenge/Recommendation re insects
3. Track changes shows updates but those changes that resulted in a deletion have been "accepted" so will not show.

Update Mar 2019
This version includes:

1. Updates from MPC meeting on 3/6/19 with Long Hill Environmental Commission Chair Terry Carruthers present
2. Changes that were accepted at the 3/6/19 meeting plus new text added (see track changes).
3. New item
    a. Terry Carruthers to provide a summarized version of the Energy Efficiency document for possible inclusion in this Element. (DONE)
        - 4/3 MPC: Create an Energy Element with TC & PB agreement

Update Apr 2019
This version includes:

1. Changes as discussed at the MPC meetings of 4/4/17 and 4/17/19

TOWNSHIP OF LONG HILL

CONSERVATION ELEMENT

OF THE MASTER PLAN

DRAFT 4/18/19

Adopted by:
The Long Hill Township
Planning Board
Insert DATE of Adoption

Prepared by Long Hill Township
Master Plan Committee

INTRODUCTION

The Municipal Land Use Law (MLUL) permits a municipality to prepare and adopt a Conservation Plan Element as part of its Master Plan. The MLUL describes a conservation plan element as follows:

> A conservation plan element providing for preservation, conservation, and utilization of natural resources, including, to the extent appropriate, energy, open space, water supply, forests, soil, marshes, wetlands, rivers and other waters, fisheries, endangered or threatened species, wildlife and other resources, and to systematically analyze the impact of each other component and element of the master plan on the present and future preservation, conservation and utilization of those resources. MLUL (N.J.S.A. 40:55D-1 et seq.)

This Conservation Element reaffirms the longstanding commitment to safeguard Long Hill's natural resources. The Element builds upon previous conservation planning decisions and the strong, continuing public support of environmental preservation by the residents of Long Hill Township.

BACKGROUND

Long Hill's geographic location presents complex environmental challenges both physical and political:

Jet Port (1959)[1]: Long Hill Township's modern history of active conservation dates to official measures taken to oppose the Port of New York Authority's proposal to build a major jetport in the township in 1959. The Passaic Township Planning Board "cited the poor location, the noise, a protest of any prospects involving the water-shed of the Passaic River" who also "suggested that the area would be better suited either for a Federal or State wild life preserve". The Passaic Township Zoning Advisory Committee stated "that an airport of the proposed type would destroy the residential character and the planned orderly growth of the Township." Ultimately the Jet Port proposal failed.

[1] See the Daily Record of December 16, 1959

Passaic River Floodwall (2011)[2]: The Army Corps of Engineers proposed building a 4,000 ft wall measuring between 4 and 5 ft in height stretching along the Passaic river roughly from Lounsberry Meadow to behind the Shop-Rite Plaza. Sluices and gates would be built on a number of tributaries. The majority of the estimated $10 million cost would be borne by Federal and State budgets with Long Hill contributing around $875,000. Although there could be benefit to about 150 homes and businesses about a dozen homeowners on the south side of the wall could see increased flooding. The proposal was not pursued with issues around cost as well as local resident and neighboring town objections.

Stormwater Management is of critical importance to Long Hill Township. Due to the Township's environmental setting bordered to the west and south by the Passaic River, existing and future development must utilize Best Management Practices to minimize stormwater runoff volume and to protect stormwater quality. *Attached to this Element is a Stormwater Management Sub- Element.*

Natural Resource Inventory Overview

The abiding public interest in the protection of Long Hill Township's environment can be traced to the rich and diverse natural resources that make up the Township. There exists large expanses of contiguous Municipal, County, State and Federal government owned or controlled open space comprising approximately 50 percent of the township's area. These include:

- The northern area of the township features the Great Swamp National Wildlife Refuge and Wilderness Area ("Great Swamp"). Most of the southern border has a large buffer of County- and State-owned parklands along the flood prone Passaic River.

- The Third Range of the Watchung Mountains forms a ridge of steep slopes through the entire central portion of the township, with dramatic vistas to both the north and south. This ridge is the long hill that is the Township's namesake.

- The Black Brook that flows through the Great Swamp and the Passaic River that forms the westerly and southern borders of Long Hill

[2] See articles at the Patch.com (Oct 19, 2011 and Nov 2, 2011) and at NJ.com (2011/03)

Township are both historic waterways. The Passaic River is a major regional water supply and has a long history of recreational use for canoeing and fishing.

- The combination of steep, wooded terrain of the Watchung Mountains, the wetlands of the Great Swamp and Passaic River, and being a part of the Atlantic flyway provide rich habitat for many species of birds, mammals and reptiles, including state threatened and endangered species.

Geology

Situated within the physiographic province of the Piedmont Plain, the Township has been shaped by a confluence of geologic events. During the Triassic Period (~250 to 200 million years ago), volcanic activity resulted in basalt flows and intrusions into the exisiting Passaic Formation, a slightly older formation composed of red siltstone, sandstone and shales. The more erosionally resistant basalt flows formed Long Hill, one of the three principal ridges of the Watchung Mountains. The less erosionally resistant Passaic Formation formed the sediment deposits in lowland areas. *Reference to Geologic Map for Township.*

Commented [DH1]: To be added later

Glacial Lake Passaic, the 200 to 250 foot deep temporary surface water impoundment created by the Wisconsin Stage of the last glacial epoch to impact this area (~19,000 to 14,000 years ago), left behind the Great Swamp as a minor remnant of its extensive coverage. The lake was formed during the melting and retreat of the Wisconsin ice sheet and the damming of southern flowing drainage channels against the northside of Long Hill. As time passed glacial meltwaters slowly eroded geologic materials forming the Passaic River and the lake slowly drained and transitioned into today's Great Swamp.

Topography

The Township is characterized by rolling terrain, expansive lowlands and higher elevations along the Third Watchung ridge or Long Hill. Long Hill, one of three parallel ridgelines of the Watchung Mountains, divides the lowlands of the Great Swamp to the north from the Passaic River along the southern boundary of the Township. Significant topographic relief is observed across the Township, with elevations ranging from El 449 feet above mean sea level near the intersection of

Long Hill Road and Gillette Road to lower elevations along the Passaic River floodplain.

Steep slopes in the Township are most prominent above the Passaic River and along Long Hill (both north and south facing) posing particular challenges to protect suitable drainage patterns, native vegetation, and slope stability. Published sources (U.S. Natural Resources Conservation Service and the NJDEP) indicate that slopes greater than 10 percent are more erodible, need special stormwater management and roadway specifications, and will raise costs for protection of infrastructure. These same sources also indicate that slopes 10-25 percent should be left in their natural condition, maintained in grass or tree cover and slopes greater than 25 percent should be left undisturbed. *Reference to Steep Slope Map for Township.*

Commented [DH2]: To be added later

Water Resources

Understanding and protecting our geologic and hydrologic resources are critical to maintaining good quality groundwater and surface water resources. Protection of groundwater resources requires the definition and characterization of sensitive recharge areas, where surface water can infiltrate more permeable soil and flow into deep subsurface aquifers. Protection of surface water resources requires the preservation of wetlands for flood storage capacity and contaminant filtering, along with vegetative buffers between impervious development and surface water bodies.

The Passaic River is a 90-mile waterway, traversing 45 municipalities and providing drinking water for more than 2 million people. This river flows south from the Great Swamp and then turns east following the valley between the Third and Second Watchung Ridges. The protection of its flood plain provides important flood storage capacity and buffers to protect water quality. This river is prone to flooding because of its very shallow gradient and meandering path. The Township has purchased flood prone properties utilizing Blue Acres fund as part of the Township's proactive work to address flood hazards.

Wetlands

Wetlands form a critical landscape type in the Township with the largest contiguous area of wetlands found within the Great Swamp. Wetlands are also

found along the floodplains of Black Brook and the Passaic River, along with many unnamed tributaries leading to these surface water features. Wetlands within the Township play a critical role in filtering non-point surface water runoff contaminants, as well as providing storage capacity for direct precipitation and surface water flooding events.

Wildlife

Outside of the Great Swamp, Long Hill Township contains over 800 acres of municipal, county or state-protected forested bottomlands that includes floodplains and riparian habitats. These act as an important buffer zone for the Great Swamp and are of particular importance to migrating songbirds and raptors. They also offer critical habitat for a variety of high priority bird species such as red-headed woodpeckers, a species regarded as "imperiled in New Jersey because of rarity" (Office of Natural Lands Management 1998). Several other State-listed species such as barred owl and red-shouldered hawk also occur. These same bottomland forests may also host the State-listed blue-spotted salamander, or federally listed bat species such as Indiana bat.

The township also protects over 100 acres of upland forest, lying on either side of Long Hill Rd. Upland forest areas can host priority bird species such as wood thrush, several migrating wood warbler species and various neotropical migrants which utilize the resources of this critical habitat. These forests are also important for fall migrating raptors. The greatest threat is that of invasive plant species such as Japanese barberry, garlic mustard, multiflora rose, bamboo and Japanese honeysuckle. These species thrive along forest edges and spread from surrounding residential encroachment.

The Great Swamp is the best studied area in the Township, and is home to 240 bird, 39 mammal, 42 reptile and amphibians, and 29 fish species. Twenty-six species in total are listed by the state of New Jersey as threatened or endangered. Approximately 109 bird species have been recorded nesting within the refuge, including important state populations of barred owls, American woodcock, wood ducks and Eastern bluebirds. Many of these species occur on Township properties. Studies focusing on specific federal and State Threatened and Endangered species are regularly conducted at the refuge. The habitat utilization and demography of Indiana bat, bog turtle, wood turtle, and blue-spotted salamander have all been studied there. Information from these studies is incorporated into management strategies on the refuge.

Ten bat species, including the federally listed endangered Indiana bat, have been identified at the refuge. Other species of concern include Eastern red bat, Eastern small-footed bat and Hoary bat. The Indiana bat, a State and federally listed endangered species and the northern long-eared bat utilize riparian corridors at Great Swamp for foraging and warm season roosting. It is quite probable that most of these bat species breed in or forage over areas of forests along the Passaic river and the slopes above.

Approximately 300 species of Lepidoptera (butterflies and moths) have been recorded in the Great Swamp, as well as many other insect species. The refuge also plays host to hundreds of species of trees, shrubs, flowers and other vascular plants, as well as an impressive list of mosses, liverworts, fungi and other flora. Many of these species will be present outside of the refuge in the relatively undisturbed habitats mentioned earlier.

Elsewhere across the Township there are some exceptionally large old trees, some of which are relics of the ancient woodlands which once covered the area. The locations of most of these have already been recorded by the Shade Tree Commission and details are on offer to the public as a tour package. Apart from their aesthetic and historic significance such ancient trees offer a greater diversity of microhabitats and act as reservoirs for species of insects, lichen, and fungi not commonly found elsewhere.

Key Challenges

Land use decisions within the Passaic River basin continue to impact flooding and flood damage in the Passaic River basin, with significant portions of the Township lying within the 100-year floodplain. *Reference to 100 year flood plain map and updated FEMA Flood Hazard Maps.*

Commented [DH3]: To be added later

Climate change is impacting the health of our forests and landscape. Extreme weather events are happening more frequently than expected, for example the Hurricane Irene and Superstorm Sandy storm events in back to back years of August 2011 and October 2012. More frequent thunderstorms have a greater rainfall intensity leading to more significant erosion, especially on unprotected steep slopes. On the other extreme are more frequent droughts stressing or killing critical vegetation needed to mitigate erosion.

Diseases and harmful insects are an increasing threat to our trees. Ash trees throughout the township are susceptible to the fatal ash yellows disease and the invasive emerald ash borer. Streetscape and forest trees are threatened by the Asian longhorn beetle, gypsy moth and the spotted lanternfly, which was found in NJ for the first time in 2018.

Conservation Recommendations

Conserving, protecting and enhancing Long Hill Townships natural resources is central to land use and planning decisions. The specific recommendations for the Conservation Plan Element of this Master Plan are:

1. Development and redevelopment should focus on avoiding the disruption of critical natural, agricultural, scenic, recreation and historic resources.

2. Create a Conservation Guide that includes policies for conservation development, restoration and includes a Township wide Natural Resources Inventory (NRI) performed with the Great Swamp and other organizations forming a factual database of all environmental assets, threatened and endangered species (for example Indiana bats), and valuable environmental attributes, such as recording the location of specific microhabitats (for example vernal pools).

3. Review existing and establish new lawful mechanisms for the protection of environmentally critical areas, and to periodically review local critical area regulations to assess their ongoing appropriateness in protecting the natural resources identified in the Township's NRI and Big Trees list as identified by the Township's Shade Tree Commission.

4. Develop a clear Steep Slope Ordinance for new construction and property alterations in mapped critical areas that are consistent with federal and state guidelines.

5. Promote ecotourism and leisure activities (e.g. bird watching, kayaking, biking, hiking, etc.) by facilitating education of and access to Township natural resource assets.

6. Promote integration of Best Management Practices ("BMP"), as defined by the New Jersey Stormwater Best Management Practices Manual/ 1 (NJBMP) and the appropriate sections of the Long Hill Township Land Use Ordinances, to be an integral part of land development projects.

7. Focus on stormwater management as a key component of all land development projects, with a goal for each project site of having no net

increase in rate, volume, or pollution levels of stormwater following development.

8. Encourage the ongoing strategic acquisition of open space for conservation and flood protection by Long Hill Township through County programs, such as the Morris County Preservation Trust Fund and State programs such as the New Jersey Green Acres Program, the New Jersey Blue Acres Program or the Easement Purchase Program available through the Morris County Farmland Preservation Program.

9. Encourage greater tree preservation and planting efforts in the Township through the implementation of the Township's Community Forestry Plan 2017 to 2021 and explore creating supporting ordinances.

10. Support where appropriate local and regional efforts aimed at protecting and restoring the ecosystems of the Great Swamp and the Passaic River corridor.

11. Encourage diversity of native plant species, where possible, to avoid same species clustering that may help the spread of diseases, invasive insects and expansion of aggressive non-native plant species.

12. Consider open space acquisitions based on the presence of critical habitat for Threatened and Endangered Species which are animals and rare plants listed under the Endangered Species Act (ESA) and within the Township's NRI.

13. Explore alternative green construction and remodeling standards such as the National Association of Home Builders - National Green Building Standard (NGBS) and those proposed by Energy Star® as operated by the Environmental Protection Agency (EPA) and the Department of Energy (DOE).

STORMWATER MANAGEMENT SUB-ELEMENT

Stormwater Management Goals

The proper management of stormwater is critical to a Township with significant wetlands and surface water resources. The requirement for NJ Stormwater Best Management Practices (BMP) in all land use development and redevelopment, will help the Township to derive the following benefits:

1. **Reduced flood damage through Land Use Management.** Most of Long Hill Township's commercial district, several municipal buildings, a number of residential homes, and the Township's wastewater treatment plant are situated within the floodplain of the Passaic River, and the Township has suffered significant losses as a result of several serious floods both recently and over the past 100 years. The 1999 flood from Hurricane Floyd, the Northeaster of 1996 and Irene in 2011 threatened all of the above mentioned areas. Therefore, focus should be upon:

    a. The reduction and improvement of stormwater runoff reaching the Passaic River is, therefore, of paramount importance in mitigating impacts to both quantity and quality risks.

    b. Considering the adoption of practices as suggested within the NJ Stormwater Best Management Practices (BMP) such as Green Infrastructure.

2. **Accessibility to clean drinking water during drought cycles**. Long Hill Township and numerous other communities in the region rely upon the Passaic River as a source of drinking water. Increased infiltration of stormwater will help to increase groundwater reserves while helping to restore more normal flow patterns in the Passaic River.

3. **Reduced water treatment costs.** Pollutants that enter the Passaic River and stormwater entry into the wastewater system increase processing costs. These costs can be reduced through the use of land use BMP and improvements to the sewer line infrastructure.

4. **Protection of natural resources.** The presence of pollutants, the erosion of stream banks, and artificial raising and lowering of water levels has an adverse effect on ecosystems and landscapes. The use of BMP will help to preserve the Township's valuable natural resources.

5. **Protection of recreational income.** When the mismanagement of stormwater causes the destruction of natural habitats and ecosystems, local income derived from ecotourism is reduced. Adherence to environmental standards will help to preserve the Township's attractive natural features.

6. **Enhanced property values.** Modern BMP have significant fiscal benefits. Construction costs for stormwater infrastructure is typically less than existing practices when using BMP and the reduced environmental destruction leaves the developed property more aesthetically pleasing, thereby commanding higher selling prices. Typically, neighboring homes see an increase in property values when proper stormwater management techniques are practiced.

Education And Public Outreach Recommendations

The State of New Jersey has recognized that ongoing education in environmental policies and procedures benefits the public good. This sub-element supports this view. Every portion of our Township lies within the watersheds of either the Great Swamp or the Passaic River, both of which are environmentally sensitive and have local and regional requirements for special protection. The preservation and restoration of these valuable natural resources will require ongoing and comprehensive Township outreach and education programs:

1. Conduct annual BMP and land use educational programs for township volunteers, employees and officials.

2. Continue and expand its efforts to raise awareness and protection of our natural resources by hosting more events centered on the Passaic River.

3. Facilitate volunteer groups to participate in river cleanups and volunteer water quality monitoring activities.

4. Continue and expand its efforts to promote recycling, energy reduction, and wastewater management.

5. Promote the use of indigenous plants that provide natural habitat, chemical free lawn maintenance, reduction of impervious cover, rain gardens, and other BMPs.

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1 BMP refers to Major Development as defined by N.J.A.C. 7:8-1. 1 et seq., which governs any land disturbance of one acre or more or one quarter acre or more of development.